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# EUROPEAN PATENT APPLICATION

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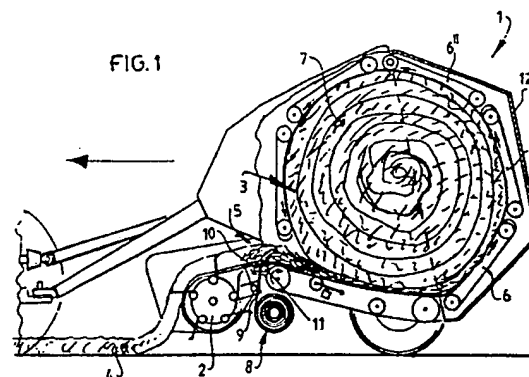
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54 Baler.

57 A baler 1 comprises a forming mould 3 into which the material 4 to be compressed is brought. The strip of material 4 moves through the opening 5, arrives in the forming mould and, with the aid of driving means, is compressed to a bale. Netting material 9 which is placed on a supply roll 8 is fed with the aid of transport rolls 10, 11 to the forming mould 3 and there wound around the bale.

The breadth of the netting material transverse to the feeding direction is according to the invention greater than that of the forming mould 3. Through use of the invention the edge zones of the net are turned over the end faces of the bale and, owing to the elasticity, the net draws itself firmly around the formed bale.



EP 0 304 104 A1

## Baler

The invention relates to netting material for a baler, as described in the heading of claim 3.

Known is a baler of the kind which is used for the formation of bales of straw or hay.

In practice it has proved that when the netting has been wound roughly three times around the formed bale, the cooperation between the netting material and the more or less elastic baled material results in the bale having sufficient cohesion.

Nonetheless, the known baler and the netting material used thereby have several disadvantages.

The completed bale bound in netting is vulnerable at the end faces, particularly at their edges, with the result that there is a tendency for the bale to disintegrate after formation. Moreover during the binding of the bale, the actual bale-forming operation of the baler is interrupted. The formation of a new bale can only be commenced after the previously formed bale has been enwrapped and ejected.

The invention has for its aim to counter these disadvantages by providing an improved netting material.

This is achieved by using a netting material as described in claim 1 together with a baler of the kind described in the heading and with the measures according to the characteristic of claim 3. Through the measures adopted, edge zones of the net are wrapped around a part of the end face of the formed bale, and owing to its elasticity the net draws itself tight around the formed bale in such manner that it is sufficient to wind the netting for only a limited distance around the bale, without disintegration taking place.

By preference the measures according to claim 2 are adopted.

By preference the measures according to claim 4 are adopted. Since netting with a length of only

$1\frac{1}{2}$  times the circumference of the formed bale has to be wrapped around the bale, a considerable time saving is achieved. The bale formation process can take place in a more continuous manner than previously.

The measures according to the characteristic of the other claims can be applied either separately or in combination. The invention will be elucidated by reference to the accompanying drawings.

In the drawings:

Figure 1 shows a cross-sectional view of the baler according to the invention;

Figure 2 shows a perspective view of a part of the apparatus of figure 1;

Figures 3 and 4 show examples of the netting material to be used;

Figure 5 shows a detail of the netting material to be used.

The baler 1 according to the invention has means in the form of a feeder roll 2 for the supplying to the forming mould 3 of a strip of the material 4 to be baled. The strip 4 passes through a supply opening 5 and then arrives in the roughly circular mould along the wall of which driving means in the form of a succession of relatively short circulating belts 6, 6', 6'' are disposed. Owing to these driving means 6, 6', 6'' the material to be compressed is rotated and thereby formed into a bale, the radial edge zone of the bale thus acquiring a greater compactness than the core. Arranged on a supply roll 8 is netting material 9, which is to be wrapped around the formed bale 7. By means of cooperating transport rollers 10, 11, the netting 9 which is pinched between the transport rollers is fed to the forming mould 3 in order to be wound around the formed bale. When the netting has been wrapped roughly  $1\frac{1}{2}$  times around the formed bale, the portion concerned is separated by means of the blocking of the rollers 10, 11 and through the presence in the netting material of weakened zones at intervals of approximately  $1\frac{1}{2}$  times the circumference of the bale. Thereafter flap 12 is opened and the bale falls out of the baler.

According to the invention the breadth of the netting material transversely to the feeding direction is greater than the breadth of the forming mould 3 or where appropriate the bale 7 to be formed and moreover the netting material is elastic in the longitudinal direction, at least at its borders.

Figures 3 and 4 show embodiments of the netting material to be used. Figure 3 shows a mesh-like material of which the borders in a longitudinal direction include elastic filament 13, 14.

Figure 4 shows a foil material with passage openings 15. In the edge zones there are present perforations 17, which are more closely spaced than the openings 15, such that the edge zones are flexible in comparison to the zones with openings 15. Figure 5 shows a weakened zone 16 in the netting material according to figure 3, for the purpose of ensuring that the netting will break on the exertion of a tensile force at that position.

This weakening may be made by local heating of the netting material either during manufacture or during use in the baler.

## Claims

1. Netting material for use in a baler, **characterized in that** the material is elastic at least at the borders.

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2. Netting material as claimed in claim 1, **characterized in that** an elastic filament is included in the border of the netting material.

3. Baler (1) with an apparatus (2) for the feeding to a forming mould (3) of the material to be compressed (4), driving means (6, 6', 6'') for causing the circulation in the forming mould (3) and the formation to a bale (7) of the material, a supply roll (8) carrying netting material (9) according to claim 1 or 2, means (10, 11) for withdrawing from the supply roll (8) and feeding to the forming mould (3) of the netting material, means for the separation of a portion from the netting material (9) on the supply roll (8) and means (12) for the delivery from the baler (1) of the formed bale (7), **characterized in that** the breadth of the netting material is chosen to be greater than that of the forming mould (3).

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4. Baler as claimed in claim 3, **characterized in that** the means (10, 11) for the separation of the portion of the netting material come into operation after a portion has been fed with a length of approximately  $1\frac{1}{2}$  times the circumference of the forming mould (3).

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5. Baler as claimed in claim 4, **characterized in that** the separation means consist of a blocking device for the SUPPLY roll (8).

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6. Netting material as claimed in claims 1 or 2 and 3, 4 or 5, **characterized in that** a weakened zone is made in the netting material at intervals in the longitudinal direction of approximately  $1\frac{1}{2}$  times the circumference of the forming mould (3).

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7. Netting material as claimed in claims 1, 2 or 6, **characterized in that** the netting material consists of foil material, in the edge zones of which closely spaced perforations (17), and in the central zones of which relatively more widely spaced openings (15) are made,

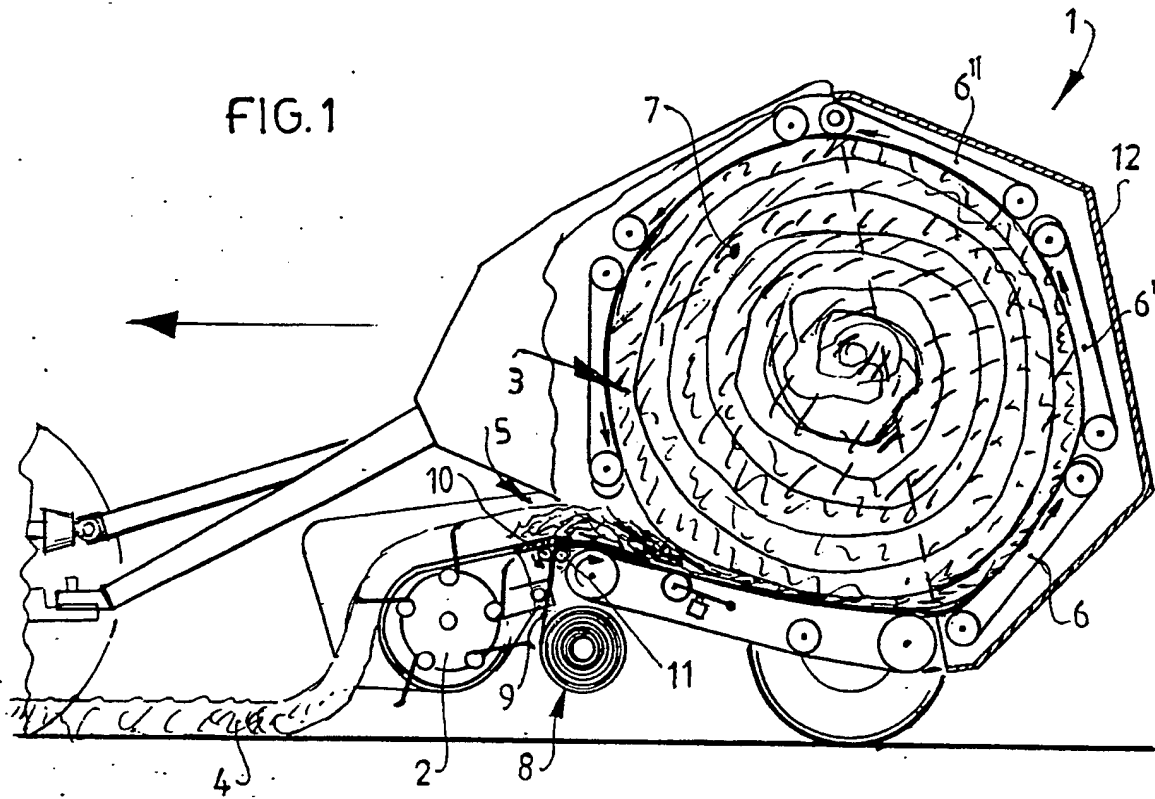
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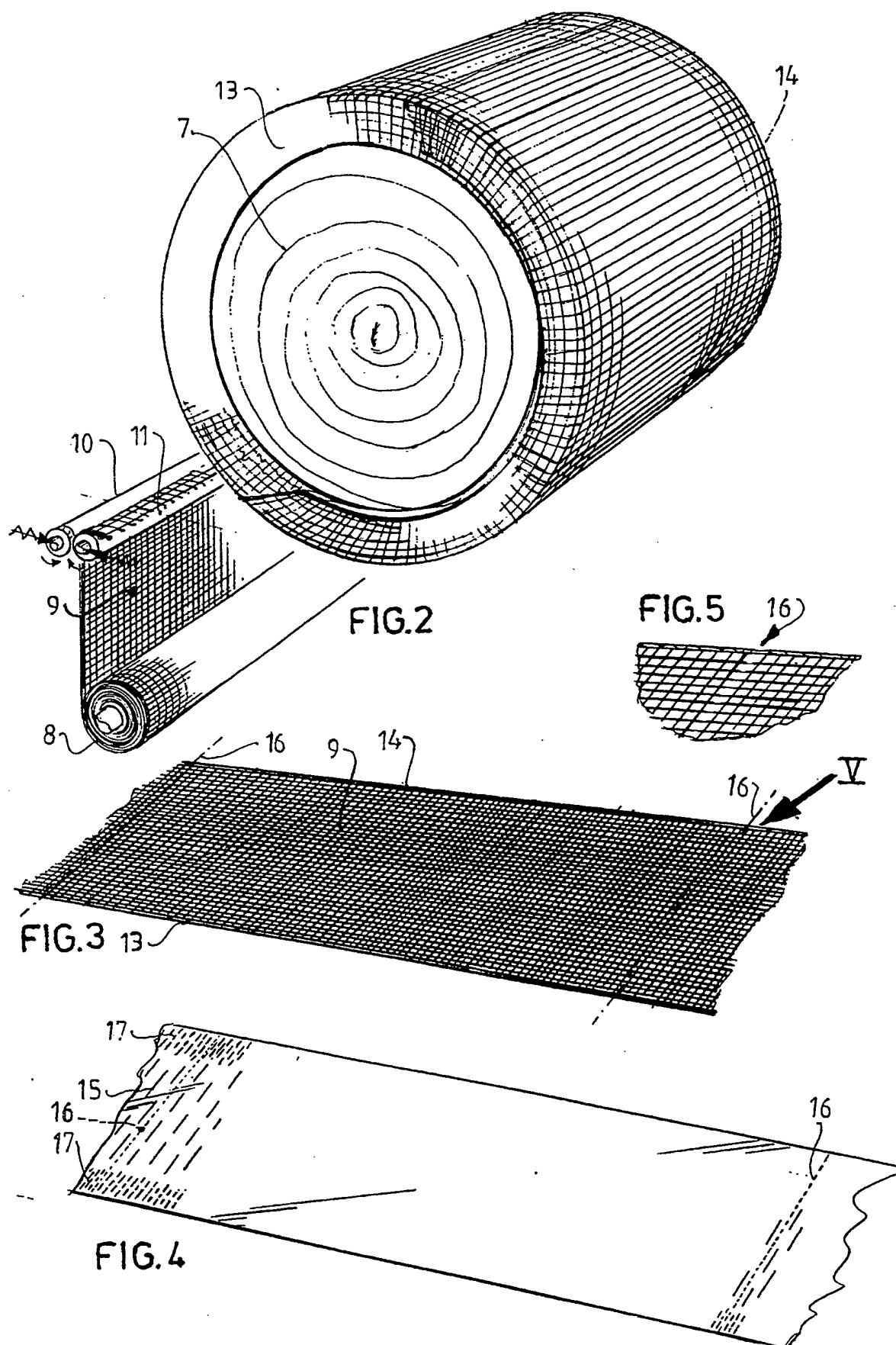
8. Netting material as claimed in claim 6, **characterized in that** the weakened zone is made by local heating.

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Office

# EUROPEAN SEARCH REPORT

Application Number

EP 88 20 1559

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	FR-A-2 530 406 (CLAAS) * Page 2, line 18 - page 3; figures 2,3,4 *	1	A 01 F 15/08 B 65 D 85/66
A	---	4,6,8	
Y	EP-A-0 105 039 (HOLMENS) * Pages 3-4; figures 1,3,4 *	1	
A	---	3	
A	EP-A-0 126 278 (POLYDRESS) * Pages 5-6; figures 1,2 *	1,4	
A	FR-A-2 553 695 (BRUSA) * Pages 2-4; figures 6-9 *	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			A 01 F B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-11-1988	Examiner VERMANDER R. H.
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document	